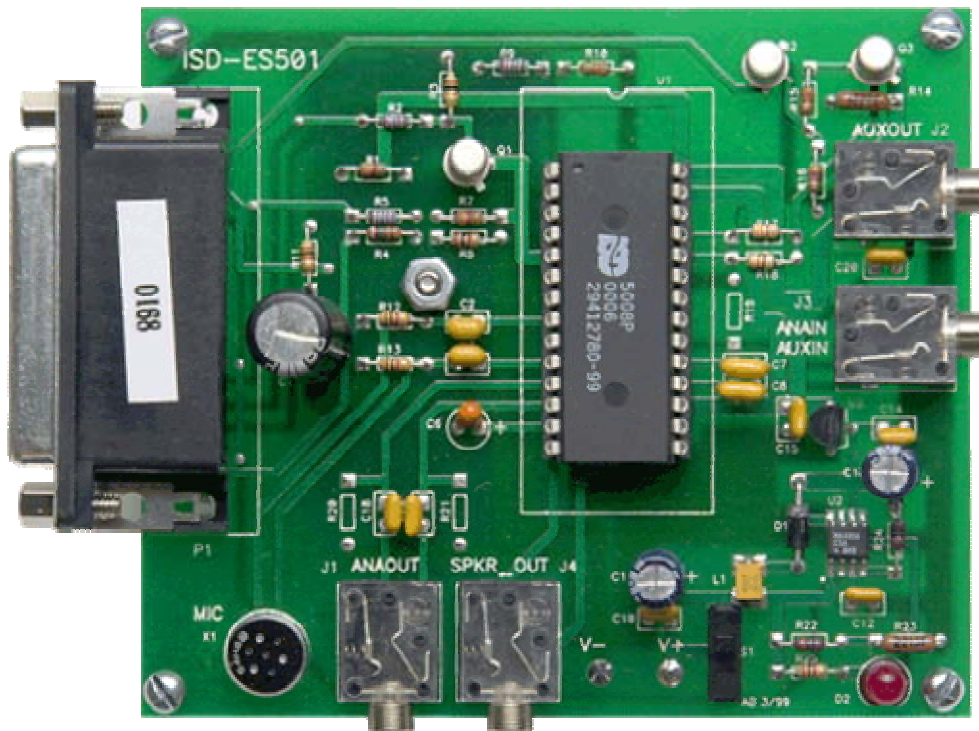


## ISD-ES501 Evaluation System



#### DESCRIPTION:

This demo board allows the complete operation of the ISD5008 IC controlled through the parallel port of a PC. All the functions of the chip may be selected in real time to allow complete evaluation of this chip for an end application. The PC connects to the demo using a standard parallel cable from LPT1.

This board is designed to be used with software (Copyright © 1999 National Instruments Corporation. All Rights Reserved) supplied by ISD. The software is supplied free of charge with the demo on a CD

#### DEVICE SUPPORTED:

Product supported	Ordering Code
ISD5008 Series	ISD-ES501

#### SYSTEMS REQUIREMENT:

Window 2000 or later

PC with Parallel Printer port.

#### CONTENTS OF KIT:

- One CD (Application Software and user's guide)
- ISD-ES501 Evaluation board
- One ISD5008 P-Dip Sample

#### SET-UP CONNECTIONS:

The PC connects to the demo using a standard parallel cable from LPT1.

This board is designed to be used with software (Copyright © 1999 National Instruments Corporation. All Rights Reserved) supplied by ISD. The software is supplied free of charge with the demo on A CD.

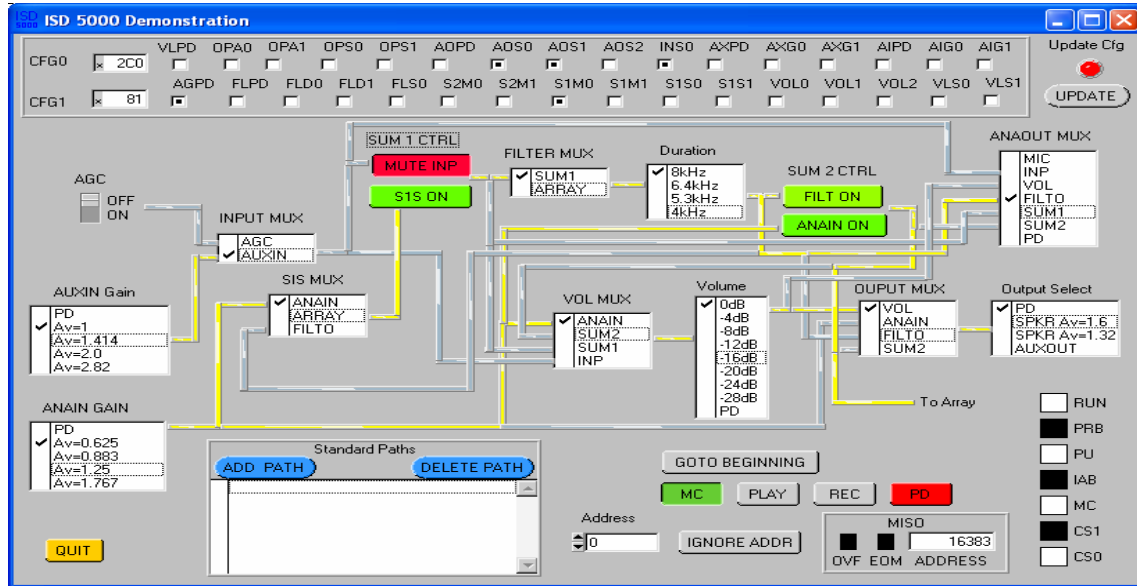
The software paints a block diagram of the major components of the chip on the screen and the possible paths between them. When a path is selected, it lights up in yellow.

Extract these files to a temporary directory and run Setup.exe. It will go through a normal Windows installation process. You will end up with an icon on your desktop that starts the demo hardware. Es501m.doc is a Microsoft Word copy of these instructions.

#### SOFTWARE:

The software paints a block diagram of the major components of the chip on the screen and the possible paths between them. When a path is selected, it lights up in yellow. Note that a path can be "possible" into an element but not selected by that element. Pointing the mouse to the white area to the left of each box and clicking on the desired change control the major elements of the ISD5008. This is the same area where the check marks appear. These controls set up paths or amplifier gains in the selected element.

*[Note that on some computers with small monitors or different video drivers the full contents of each white box will NOT be displayed. It will be necessary to click on the box and then use your "up" and "down" arrow keys to view and select all possible conditions. Otherwise, the software still works the same.]*



As the change is selected, the check mark will follow. Note that in elements where PD (Power Down) is an option, the element can be set up for a specific gain and be powered down also. In this case, the element is just powered down. Ignore the gain indication. [Note, The Feedthru path is not illustrated on the screen. It is selected as "MIC" at the ANA OUT Mux.]

The controls to the two on-chip mixers operate slightly different. The SUM 1 mixer inputs are called MUTE INP and S1S ON and the SUM 2 mixer inputs are called FILT ON and MUTE ANA. Click on these to select red for OFF and green for ON.

Most changes do NOT take place immediately. The "UPDATE" indicator in the upper right corner of the display will light red to indicate that a change has been indicated but not executed. Click on the UPDATE button beneath the "UPDATE" indicator to cause all the indicated changes to be made at the same time.

There are two exceptions to the update sequence. If the volume control is changed, it updates immediately without the need to click on UPDATE. Also, if a Standard Path is selected, it also causes an immediate change in all the paths.

Standard Paths are very easy to set up. Simply program the chip into a desired state making sure that the update button (if red) has been clicked on. Then select ADD PATH, name the path as desired and click on OK. The new path will be added to the list. Paths may be deleted in a similar manner.

Record, Playback, Message Cueing (MC) and Power Down (PD) are directly and immediately controlled by the buttons in the lower right side of the screen. PD is either red or green to indicate the overall power status of the chip. Green indicates the chip is powered up.

The bottom center button in this area is the Ignore Address/Use Address select. If IGNORE ADDR is selected, the chip will begin the "next" operation where the previous operation ended. If USE ADDRESS is selected, the address indicated in the white block immediately to the left of this button will be used. An address may be directly entered in this block after positioning the cursor.

Clicking on GO TO BEGINNING simply loads address zero into the ISD5008's address registers and is generally used with the IGNORE ADDR setting.

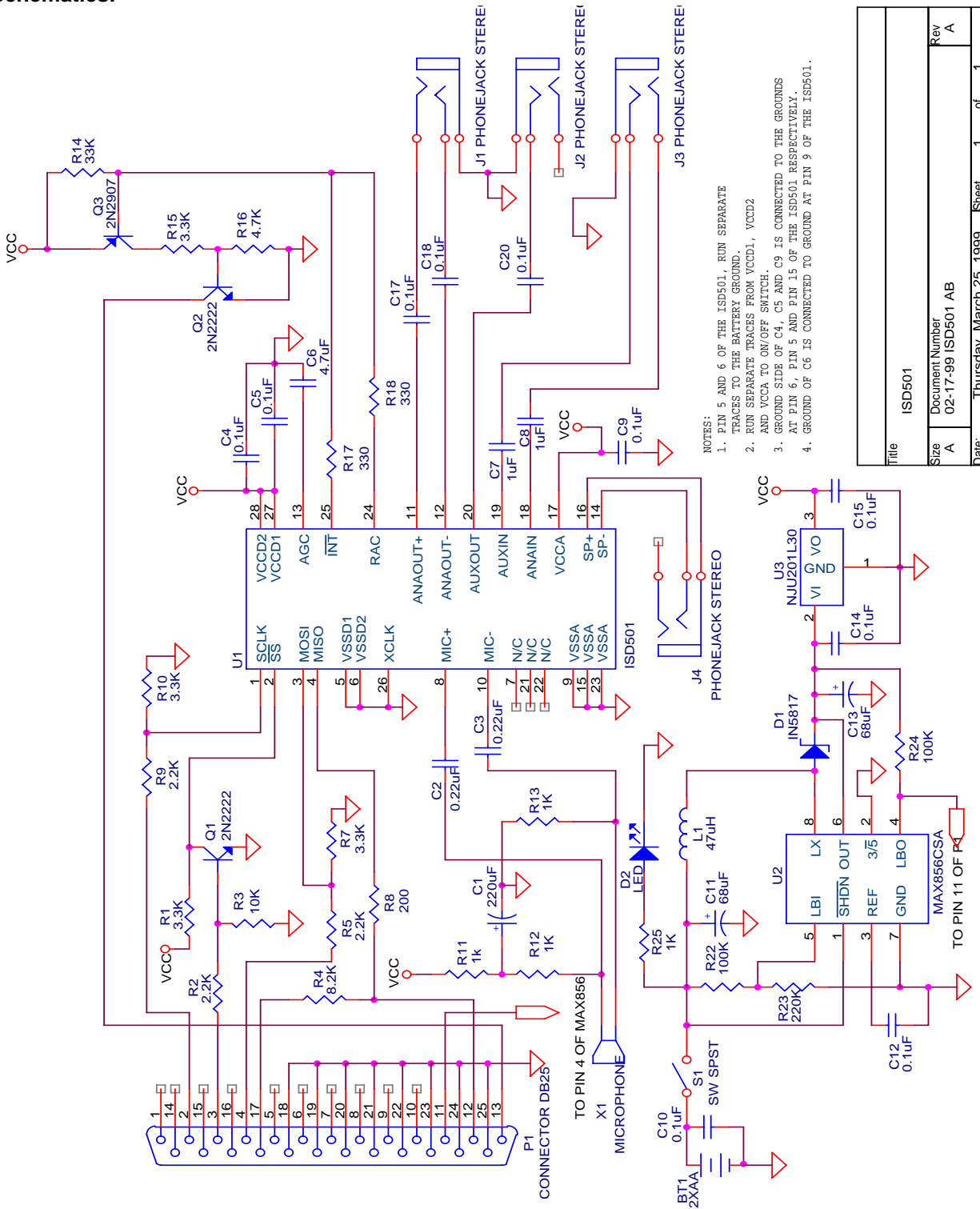
The block to the right of the IGNORE ADDR/USE ADDRESS button shows the status of the chip's address during record or playback and indicates the current address after an operation ceases. The OVF and EOM indicate if the status of the chip if an internal interrupt occurs. Note that during record or playback the address indication displayed in the white block may lag somewhat behind the actual address in the chip. During active record and play operations, this readout is for reference only. The address displayed after a record or play cycle ends will be correct, however.

The section of the display to the top of the screen shows the setup of the two configuration registers. See the ISD5008 data sheet for more details on these registers. The hex values in the two blocks to the left of the display are those that may be written to the chip to set up the configuration indicated.

The vertical set of blocks to the lower right of the display show the SPI bits in real time as they are sent to the chip to perform the desired functions.

The attached PC board layout shows the analog connections to the ISD5001 demo board prototype. ANA OUT is a differential output and comes out through a stereo jack as indicated. The Speaker output is a stereo jack used without a ground connection to differentially drive a monaural speaker. AUX IN and ANA IN are provided together through a stereo jack. This is done so that a standard shielded stereo cable may be connected between a PC sound board output and this input. This allows the left channel to drive one of the inputs and the right channel to drive the other. The left and right channels may be wired differently from system to system so it is left for the user to empirically determine which channel is ANA IN and which is AUX IN. It's a nice demo to run stereo audio into the demo unit with the two stereo channels driving ANA IN and AUX IN. The two channels can be mixed in the SUM 1 mixer and demonstrated by turning them on and off individually.

**Schematics:**



- NOTES:
1. PIN 5 AND 6 OF THE ISD501, RUN SEPARATE TRACES TO THE BATTERY GROUND.
  2. RUN SEPARATE TRACES FROM VCCD1, VCCD2 AND VCCA TO ON/OFF SWITCH.
  3. GROUND SIDE OF C4, C5 AND C9 IS CONNECTED TO THE GROUNDS AT PIN 6, PIN 5 AND PIN 15 OF THE ISD501 RESPECTIVELY.
  4. GROUND OF C6 IS CONNECTED TO GROUND AT PIN 9 OF THE ISD501.

Title	ISD501
Document Number	02-17-99 ISD501 AB
Size	A
Rev	A
Date:	Thursday, March 25, 1999
Sheet	1 of 1